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DEPARTMENT OF STATE LANDS

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STATE OF MONTANA

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February 28, 1994

Dear Reader:

Enclosed for your review is a Draft Environmental Impact Statement (DEIS) prepared by the Montana Department of State Lands (MDSL). The DEIS evaluates a proposal by Holnam, Inc. for increasing the permitted acreage to 970 including 587 disturbance acres and updating their reclamation plans.

Public comment on this DEIS will be received by the agencies until 5:00 p.m. March 30, 1994. Comments should be about the adequacy of the DEIS in assessing issues, new information not considered that may influence the analysis, and clarification. Comments should be specific. The agencies will use public comments, agency responses, the Final EIS, and the company's application to make a decision on the permit. The decision may be to approve the proposal, deny the proposal only if State law is violated, or approve the proposal with modifications.

Comments may be directed to Bob Winegar 444-2074 or mailed to Bob Winegar, Montana Department of State Lands, PO Box 201601, Helena, MT 59620-1601.

Thank you for your time and consideration. Please call if you have any questions.

Sincerely,

Bob Winegar

Robert C. Winegar
Program Supervisor
Hard Rock Bureau
Reclamation Division

RCW/PP/mm

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DRAFT ENVIRONMENTAL IMPACT STATEMENT

for

HOLNAM, INC.
APPLICATION FOR LIFE-OF-MINE-EXPANSION AMENDMENT TO
DEPARTMENT OF STATE LANDS OPERATING PERMIT 00004

PREPARED BY:

DEPARTMENT OF STATE LANDS
HARD ROCK BUREAU
HELENA, MONTANA

PURSUANT TO THE
MONTANA ENVIRONMENTAL POLICY ACT

February 28, 1994

SUMMARY

Holnam, Inc. has applied for a life-of-mine (LOM) expansion to The Montana Department of State Lands (MDSL) to continue their mining operation for limestone, shale and sandstone between Logan and Trident, MT. The mine supplies raw materials for cement manufacturing to the Trident cement plant.

The MDSL has identified two areas of controversy dealing with solid waste disposal on the mine site and socioeconomic impacts from mine closure. This environmental impact statement (EIS) analyses three alternatives: the company's proposed plan, the no-action alternative and the company's proposed plan with modifications, which is the MDSL's preferred alternative.

Company's Proposed Plan

Mining began at the site in 1908. Currently, over 250 acres have been disturbed by mining. The applicant would continue to quarry limestone, sandstone and shale at the current mining rate using the existing equipment and personnel as described in the LOM expansion application. Holnam has identified reserves of from 60-1000 years in the 970 acre permit boundary. Eventually up to 587 acres could be disturbed. All areas would be reclaimed except quarry highwalls and a minimal road system for access. A solid waste landfill and two cement plant kiln dust dumps are on the mine property. The mining company has proposed air and water quality monitoring and controls to limit impacts from solid waste disposal on the site.

No-action alternative

If the no-action alternative is selected, Holnam would have to resubmit a new operating and reclamation plan for agency approval or shut down the mine and begin reclamation.

Company's Proposed Plan with Modifications

The company's proposed plan was modified by adding additional mitigating measures to limit blowing cement kiln dust during operations and to identify potential groundwater impacts from solid waste disposal in the mine area.

Comparison of Alternatives

The company's proposed plan would have potential impacts to air quality from nuisance levels of blowing dust resulting from kiln dust handling and deposition practices. Potential water quality impacts from the solid waste landfill may not be identified by the company's proposed water quality monitoring program. No socioeconomic effects on the local economy would result from approval of the company's proposed plan.

The company's proposed plan with modifications would increase controls of

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CHAPTER I - INTRODUCTION

A. Proposed Action

On March 17, 1993, the Montana Department of State Lands (MDSL) received an application to amend operating permit 00004 from Holnam, Inc. (Holnam), formerly Ideal Basic Industries, Inc., to continue mining at their quarries located near Logan and Three Forks, MT (Holnam, 1993a). Holnam has mined limestone, shale and sandstone from three distinct quarry areas for use at the Trident plant to make cement (Figure 1). Holnam is presently bonded for approximately 230 acres of disturbance.

Under the proposed amendment Holnam would permit 970 acres of which 587 would be disturbed in the projected life-of-mine (LOM) activities. In addition, Holnam's amendment includes an updated reclamation plan.

Holnam mines 500,000 tons of limestone, 30,000 tons of sandstone, and 15,000 tons of shale per year. Disturbances would include continued mine quarry expansions, expansion of the existing kiln dust dump and modification of access and haul road systems. No changes in the mining method or rate of mining are proposed. Holnam employs 11 for their mining operation. No changes in employment are proposed as part of this amendment application.

B. Purpose and Need for Action

The application for the proposed LOM amendment to operating permit 00004 was submitted to the MDSL on March 17, 1993, pursuant to the Metal Mine Reclamation Act (MMRA). Holnam has submitted this application in order to continue mining their reserves to continue producing cement. Approval for continued mining would assure availability of raw materials to the Trident cement plant. The Trident cement plant is a major employer in Gallatin County. The agency is completing this environmental impact statement (EIS) in order to comply with the Montana Environmental Policy Act (MEPA).

This EIS evaluates the company's proposed plan, the proposed plan with additional air quality controls and water monitoring, and the no-action alternative. The MDSL will review the alternatives and weigh the opportunities, tradeoffs, positive and negative impacts, and come to a decision. Decisions made pursuant to MMRA can be challenged in district court for a period of 90 days after a permit is issued.

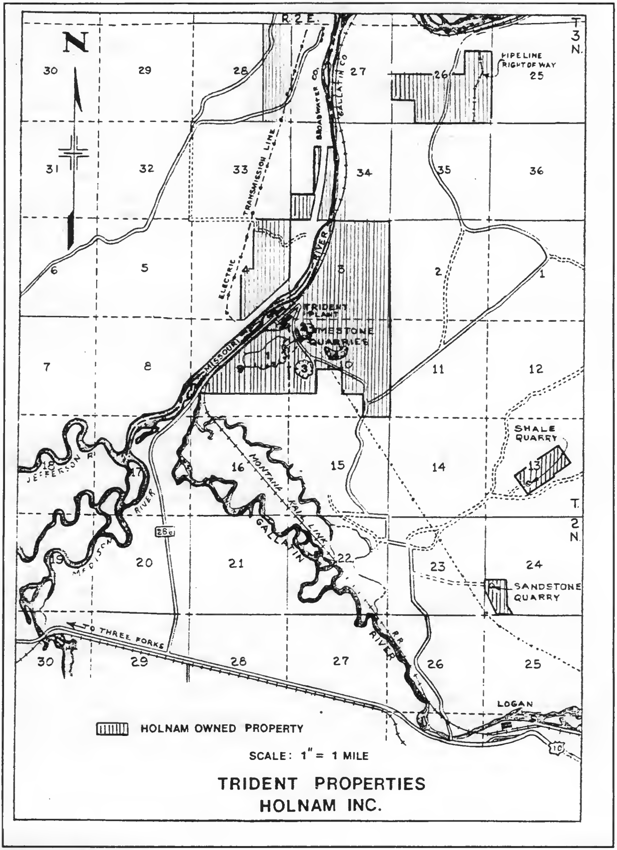


Figure 1: Site Location

C. Background and Project Location

Mining and cement manufacture began at the site in 1908 when the plant was constructed by the Three Forks Portland Cement Company. At the time, there were few environmental laws regulating mining or cement manufacturing. In 1971, Montana passed the MMRA. Ideal Cement Company, a division of Ideal Basic Industries, Inc. operated the mine and plant in 1971, and received one of the very first mining permits in the state, operating permit 00004, from the MDSL on December 9, 1971. The cement plant was "grandfathered" from MMRA legislation. The plant is regulated by the Montana Department of Health and Environmental Services (MDHES) for water and air pollution concerns. Kiln dust from the plant is disposed of in quarry areas that have been mined out. The MDSL coordinates with MDHES to limit potential air and water quality impacts that result from mining operations.

The operating permit was amended in 1982 and again in 1985 to allow expansion of disturbed acreages. Holnam assumed responsibilities under operating permit 00004 in 1990. In March 1991, the MDSL asked Holnam to amend the operating permit to quantify life-of-mine disturbances and to update reclamation plans. This LOM application is the result of that request.

D. Land Status

Holnam's Trident plant and mine quarries are located in Sections 3, 4, 9, 10, 13 and 24 of T2N, R2E, and Sections 26, 28, and 34 of T3N, R2E on private lands approximately 4 miles northwest of Logan in Gallatin County (Figure 1). Holnam owns or leases the surface and mineral rights on all acreage. No public lands are involved in the area.

E. Public Involvement

The agencies sought public input to help identify environmental issues and concerns through scoping. The MDSL sent notice of receipt of the application to the MDHES Water Quality Bureau (WQB), contacted the MDSL's liaison with the MDHES Air Quality Bureau (AQB), and sent appropriate information about cultural resources to the State Historic Preservation Office (SHPO). Newspaper articles discussing the current amendment and operational dust control at the plant have appeared in the Bozeman Daily Chronicle on April 22 and July 13, 1993, and in the Billings Gazette on April 23, 1993. Public notice of receipt of the application for amendment was placed in the Bozeman Daily Chronicle on December 26, 1993 and January 2, and 9, 1994.

In addition to public scoping, the agencies reviewed the proposal for "completeness" to ensure adequate information was contained in the proposal to evaluate the environmental effects of the proposed project. The application was determined complete on December 14, 1993. A permit decision will be made following this evaluation and public comment.

F. Issues Raised in the Scoping Process

1. Air Quality

a. Burning of Hazardous Wastes in the Trident Cement Plant

Holnam applied to the MDHES for a permit to burn hazardous wastes at their Trident cement plant (Holnam, 1991). The application to burn hazardous waste is on hold and is considered incomplete until rules are developed by MDHES for burning of hazardous wastes. When the standards are established MDHES will then proceed with processing the application and preparing the appropriate MEPA documents.

The company's mining proposal submitted to the MDSL and this EIS are for continued mining of the rock quarries only and are not involved with Holnam's application for a permit to burn hazardous wastes. As a result, this issue will not be evaluated in this EIS.

b. Historic Kiln Dust Deposits

The MDSL and the MDHES AQB, WQB and Solid and Hazardous Waste Bureau (SHWB) have received complaints about the deposits of kiln dust on the surrounding landscape at Holnam's Trident plant (AQB 1993). The plant was constructed in 1908. No air pollution control equipment was installed at the plant until the early 1970's. The surrounding area is covered with deposits of cemented kiln dust that are a maximum of 2-3 feet thick. These are historic deposits that are not covered under the MMRA. However, the MDSL has cooperated with the WQB, AQB and SHWB to review the severity of the problem on site inspections in 1992 and 1993 (MDSL 1992a, 1993). The SHWB has sampled the material and has concluded that the material is not hazardous and does not require cleanup under the Montana Comprehensive Environmental Cleanup and Responsibility Act (CECRA) (SHWB, 1993). Therefore, this issue is outside the scope of this EIS.

c. Recent Kiln Dust Air Quality Problems at Holnam

Cement kiln dust is a byproduct of air pollution control at the cement plant. Cement kiln dust is being evaluated by the Environmental Protection Agency (EPA) for Congress as a potential hazardous waste product (EPA 1993). Concerns about kiln dust from the existing operations observed blowing off the mine site on windy days, especially during summer thunderstorm activity, have been raised (AQB 1993). As a result, cemented dust deposits in the area may still be growing because of mine site deposition problems. The problem of kiln dust deposition from existing operations will be evaluated in this EIS.

2. Water Quality

a. Historic Solid Waste Disposal Facility on the Mine Permit Area.

A historic landfill on the limestone mine permit area has been used by the mining company and by local residents of Trident for years. There are concerns about contents of the landfill and possible contamination of groundwater from old chromium kiln bricks or other potentially hazardous materials in the landfill. This water quality issue will be evaluated in this EIS.

b. Kiln Dust Water Quality Concerns

Kiln dust from cement quarries have produced water quality problems at several sites in the US (MDSL 1992a). Potential problems with cement kiln dust include heavy metal contamination and increases in the pH and temperature of water above water quality standards. The MDSL will evaluate this issue in this EIS.

c. Leaking Underground Storage Tanks at the Plant

Another recent complaint about the Holnam plant operations has been water quality contamination in the plant area from leaking underground fuel storage tanks. Holnam has been cleaning up the problem under the direction of the MDHES Underground Storage Tank (UST) Section. This problem has been resolved and therefore is outside the scope of this EIS.

3. Threatened or Endangered Species of Plants and Animals

Concerns also exist over the possible use of the surrounding area by falcons, eagles, and other potential rare and endangered animals as well as the potential presence on the mine site of sensitive plant species. Holnam hired consultants who conducted plant and animal surveys in the area (Rangelands, Inc. 1993;

Morrison-Maierle 1993). The studies concluded that the area receives minimal use and has limited potential habitat for rare and endangered species of plants and animals. After review of the surveys and site inspections, the MDSL has concluded that the area has limited potential habitat for rare and endangered plant and animal species. Therefore, this issue will not be evaluated further in this EIS.

4. Socioeconomics

Concerns were raised about continued long-term employment. What would the effects be on employment if the no-action alternative were selected? This issue will be tracked through this EIS.

G. Agency Responsibilities

1. Montana Department of State Lands (MDSL)

The Commissioner of the MDSL must decide whether to approve the application as proposed, approve with modified mining or reclamation plans, or deny the permit, as required by MMRA. The MDSL administers MMRA which applies to state, federal, and private lands. The purpose of the act is to provide that the usefulness, productivity, and scenic values of all lands and surface waters involved in mining and exploration receive the greatest reasonable degree of protection and reclamation to beneficial use. The act and its regulations (ARM 26.4.101 et seq) set forth the steps to be taken in the issuance of an operating permit for and the reclamation of the applicant's proposed mine expansion.

The MDSL's rules (ARM 26.2.601 et seq) implementing MEPA, Title 75, Chapter 1, MCA, require preparation of an environmental analysis. This EIS has several purposes:

a. It serves to ensure that the agency uses the natural and social sciences and the environmental design arts in planning and decision-making;

b. It assists in the evaluation of reasonable alternatives and the development of conditions, stipulations or modifications to be made a part of a proposed action;

c. It determines the impacts associated with a proposed action;

d. It ensures the fullest appropriate opportunity for public review and comment on proposed actions, including alternatives and planned mitigation; and

e. It examines and documents the effects of a proposed action on the quality of the human environment, and provides the basis for public review and comment.

The Commissioner of the MDSL may deny a permit only when it can be demonstrated that air and water statutes cannot be complied with and/or the reclamation plan as proposed is not feasible (MMRA, 82-4-351, MCA). A permit may also be denied if a person, or any firm or business association of which that person was a principal or controlling member has a bond forfeited (MMRA, 82-4-360, MCA) or for failure to reclaim an operation (MMRA, 82-4-341(6), MCA). Holnam has not forfeited any bonds under MMRA and has not failed in its reclamation obligations.

2. Other State Agencies

a. State Historic Preservation Office (SHPO)

The SHPO is responsible for cooperating with and advising the MDSL when potentially valuable historical, archaeological, or other cultural resources are located within a project area (Montana Antiquities Act Sections 22-3-401 through 22-3-442, MCA, and the National Historic Preservation Act [P.L. 89-665 as amended and re-authorized E.O. 11593]). Advice given to the MDSL may include comments on an applicant's plan for impact mitigation of sites eligible for nomination to the National Register of Historic Places. This office also reviews the EIS to ensure compliance with cultural regulations.

The SHPO office also seeks determinations from the Keeper of the National Register for sites believed eligible for listing on the National Register of Historic Places. During mine operation, the MDSL is responsible for monitoring compliance with historic preservation and monitoring plans on private lands. Surveys on the proposed expansion area document the lack of potentially important cultural resources.

b. Montana Department of Health and Environmental Sciences

(1) Air Quality Bureau (AQB)

The AQB administers the Clean Air Act of Montana (Title 75, Chapter 2, MCA). Any proposed project with potential to emit more than 25 tons per year of any pollutant must obtain an air quality permit before construction. The applicant must apply Best Available Control Technology (BACT) to each emission source.

The applicant must also demonstrate that the project would not violate Montana or Federal Ambient Air Quality Standards. At present, Holnam holds a valid air quality permit. The MDSL is coordinating with AQB and Holnam, Continental Lime, Inc. at Townsend, and Ash Grove Cement, Inc. at Montana City, on updating kiln dust control practices in their operations through voluntary controls initiated by the mining companies, amendments to the MDSL operating permits and eventual updates to their air quality permits.

(2) Water Quality Bureau (WQB)

The WQB is responsible for administration of the Montana Water Quality Act (Title 75, Chapter 5, MCA), providing for the classification of surface waters, establishing surface water quality standards, and authorizes the issuance, suspension, revocation, modification, or denial of permits to discharge sewage, industrial wastes or other wastes into state waters. ARM 16.20. 1301 et seq. are the Montana Pollutant Discharge Elimination System (MPDES) rules for permits.

An MPDES permit must be obtained before any discharge to surface water may occur. The MPDES permit contains water quality limitations and requires self-monitoring of effluent by the permittee. Mining operations must also comply with Montana groundwater standards. Holnam had a discharge permit for non-contact cooling water from the plant. That discharge point has been eliminated by Holnam. Currently, no water leaves the mine site as part of mine operations.

Holnam has applied for a Montana Storm Water permit for both the mill and quarry sites which addresses the management and control of storm water related discharges (Holnam 1993b). The Storm Water regulations are provisions of the Federal Clean Water Act (Section 402). The regulations (40 CFR Part 122.26) require a storm water permit for mining activity (including active and inactive mine sites) for storm water discharges which come into contact with any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations as of October 1, 1992.

(3) Solid and Hazardous Waste Bureau (SHWB)

(a) Montana Superfund Section

The MDHES Superfund Section of the SHWB is responsible for implementing CECRA (Title 75, Chapter 10, MCA). CECRA provides a legal mechanism for the MDHES to investigate and clean up, or require potentially liable persons (PLPs) to investigate and clean up, all sites where the release of a hazardous substance has occurred or has the potential to occur. CECRA was enacted to deal with hazardous sites that are not on the federal Superfund National Priority List (NPL) or that are not covered by other MDHES programs. Currently, there are 250 hazardous substance sites in Montana not on the NPL and an additional 50 potential sites identified.

Because of public complaints about the potential hazards of historic cement kiln dust deposits in the Holnam plant area, the SHWB in cooperation with the MDSL and the WQB inspected the site in 1993 and collected some samples of the kiln dust deposits. The SHWB concluded that the historic kiln dust deposits do not pose a threat to the environment and clean up is not necessary under CECRA (SHWB 1993). The WQB agrees that the historic kiln dust deposits do not pose a threat (WQB 1993).

(b) Montana Underground Storage Tank (UST) Section

The Underground Storage Tank (UST) Program of the SHWB is responsible for implementing the Montana Underground Storage Tank Rules for Tank Management and Operation (Title 16, Chapter 45, ARM) and is comprised of the UST Corrective Action Program and the Leak Prevention Program (LPP). Under the Corrective Action Program, the technical staff provides emergency corrective action response capability at UST facilities and approves, conducts, and oversees remedial investigations and cleanups in compliance with federal and state cleanup regulations. The Petroleum Tank Release Compensation Board (PTRCB) provides funding for the MDHES for technical staff overseeing leaking UST release investigations and corrective actions initiated by responsible parties. The federal Leaking UST (LUST) Trust Fund funds technical staff who coordinate and direct the investigation and remediation of LUST sites which do not have an identifiable or financially solvent responsible party.

Under the LPP, the technical staff provides compliance inspections of each UST facility to determine proper leak detection methods, assess health and environmental effects of improper hazardous material storage, investigates problems, directs corrective measures, and evaluates UST design and operation as they relate to environmentally safe management. The LPP also licenses UST installers and removers and issues permits for UST installations, modifications, and removals.

Holnam had a leaking underground storage tank in the past that showed up through water quality monitoring at the plant site. Holnam has been cooperating with the MDHES UST Section to clean up the leak.

(c) Montana Waste Management Section (WMS)

The Montana Waste Management Section of MDHES regulates the disposal of solid waste in Montana in compliance with the Montana Solid Waste Management Act (Title 75, Chapter 10, Sections 201 et seq.) and its rules (ARM 16.14.501 et seq.). Any landfills in Montana must be licensed by WMS. Holnam has closed a historic landfill on their property in compliance with WMS closure requirements.

CHAPTER II - PROPOSED PLAN AND ALTERNATIVES

This chapter summarizes the proposed life-of-mine (LOM) plan as modified during the completeness process, a no-action alternative, and a modified company plan.

A. Company's Proposed Plan

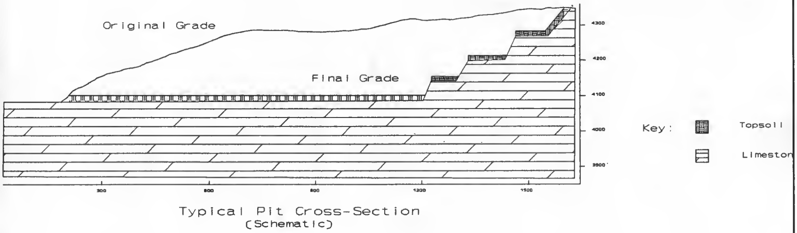
Holnam has submitted a LOM plan and has identified minable reserves for at least 60 years of continued operations as described below. If approved, mining would continue at the current rate in three distinct quarry areas. The existing mining operations have disturbed from 0-25 acres of new ground per year since the mine permit was issued in 1971. The total area permitted would increase to approximately 970 acres, of which approximately 587 acres would ultimately be disturbed. Table 1 provides a summary of projected permit and disturbance acreage.

TABLE 1: Proposed Disturbed and Permit Acreages

	Permit Boundary Acres	Disturbed Acreage	Life-of-mine Reserve (Years)
Limestone Quarries	799.5	500.8	300
Sandstone Quarry	80	40.3	60
Shale Quarry	91	45.6	1000
TOTAL	970.5	586.7	---

Holnam proposes to submit detailed development plans in 5-year increments for agency review. The plans would detail areas to be mined, road locations, soil salvage volumes, and updated reclamation plans for disturbed areas. These 5-year reviews would enable Holnam to amend and modify the operation and reclamation plans to take full advantage of new information and unexpected conditions, and to comply with the purpose and intent of applicable environmental laws. Any impacts realized as a result of changes in the plan not analyzed in this LOM plan EIS would be subject to environmental review at the time of the proposed change.

Figure 2: Typical Cross-Section of Reclaimed Limestone Quarry



1. Mine Operating Plan

The proposed LOM amendment does not increase the mining or milling rate at Holnam. The mine currently employs 11 workers who use a 6-yard front-end loader and three 35-ton trucks to mine the limestone, shale and sandstone. The limestone quarry area contains four distinct mining areas.

Mining of the limestone, shale and sandstone deposits would continue using typical open pit/quarry techniques. Holnam's mine quarries do not result in a classically shaped open pit. The mined out quarries appear as sidehill cuts. Mining results in flat benches with near vertical rock highwalls between each mining level. This results in the classic stairstep appearance at the back of the quarry (Figure 2). The mining practice employed by Holnam does not produce a mine pit. Mining is terminated above the level of any water table.

Haul roads into the active mine areas would be strategically placed to compliment ore production. These roads would tie into the existing road network. Minor road changes would occur as the quarries advance into new reserve areas. One mine road in the limestone quarry area has been historically been open to public use. This road serves as a shortcut from Trident to Logan. In the limestone quarries area, Holnam plans to control public use of this shortcut road from the plant area to the Clarkston-Logan county road. For safety reasons, this one mile long road through the quarry area would be redesigned. The road is located between two quarries and is crossed or entered at 14 locations. An alternative road is being developed to guide the public through the quarry area safely.

Prior to any disturbance, soil would be collected and stockpiled for use during reclamation. The limestone would then be drilled, blasted, and transported to a crushing facility where it would be crushed prior to the actual cement production process. The three mining deposits produce small amounts of waste rock. The limestone quarries produce a small amount of waste rock with a level of magnesium not suited for cement manufacturing. This waste rock is crushed and used for road base. Any waste rock left at the end of mine life would be used to cover mine benches before soil replacement.

Holnam proposes to continue mining 500,000 tons of limestone, 15,000 tons of shale and 30,000 tons of sandstone per year. Holnam produces 50,000 tons of kiln dust per year as a result of air quality control measures employed at the plant area. Kiln dust is deposited in mined out portions of limestone quarries prior to reclamation.

Surface water runoff during mining would be managed with a series of diversions, ponds and control structures, draining into the mine interior where evaporation and infiltration would be the mechanisms for water dispersion. Other storm water runoff ponds are proposed for the Trident Cement Plant drainage area and would collect water from the haul roads and mill area. These plans are consistent with Holnam's proposed storm water permit application (Holnam, 1993b). No surface water discharges are proposed as part of the mine plan at Holnam. In addition, Holnam has eliminated the discharge of coolant water from the plant to the Missouri River. As a result, no water enters the Missouri River from Holnam's mine operations at Trident.

2. Reclamation Plan

The proposed post-mine land use for all three quarry areas is rangeland. All disturbed areas except steep quarry rock faces and a minimal post mine road system would be soiled and revegetated. Holnam would also reclaim over 90 acres of land disturbed before passage of the MMRA.

Specifically, the reclamation plan will include:

a. Mine Areas

(1) Limestone Quarries Area

The limestone mine plan would produce limestone from 4 quarry areas. The limestone quarry floors will be revegetated. Replacement soil depths will be 10 inches using stockpiled soil and loess. The limestone quarries would have a highwall consisting of a series of flat benches and near vertical walls resembling stairsteps (Figure 2). Loess and soil materials will be used to reduce the highwall slope of the upper bench. The final floor at the bottom of the quarries will be graded into a depression to prevent runoff from the reclaimed areas leaving the site. The bank slopes in this final depression would be graded to 3:1 using crushed waste rock, loess, and stored soil materials. The only area unreclaimed in the limestone quarries would be the near vertical rock faces and a minimal road system throughout the property. The mined out limestone quarry 2 area would be reclaimed as the kiln dust dump is completed.

(2) Sandstone Quarry Area

Reclamation plans for the sandstone quarry are similar to the limestone quarries plans. The sandstone quarry area would be completely revegetated except for the main highwall rock faces. The rest of the disturbed areas would be covered with 6 inches of soil and revegetated.

(3) Shale Quarry Area

Reclamation plans for the shale quarry are also similar. However, the entire mine area would be reclaimed. Mine highwalls would be reduced where ephemeral drainages are intercepted. This would minimize final reclamation slopes and to limit erosion on the reclaimed surfaces. All reclaimed acres would be covered with 6 inches of soil and revegetated.

b. Kiln Dust Dump

A kiln dust dump, sloped at 2 horizontal to 1 vertical (2:1), was covered with soil and seeded in 1977. It was considered reclaimed in 1982. Some patching of eroded areas was done by Holnam in 1993. The performance of this and other reclaimed sites were used to develop a site-specific combination of soil, soil amendments, and plant species for reclamation at the mine.

Holnam has hired a full-time employee who will be responsible for dust control over the entire mine site, including the kiln dust dump. Holnam has constructed an irrigation system on the kiln dust dump to help control blowing dust from the dump.

The current kiln dust dump in the mined out limestone quarry 2 area will hold approximately 30 years of kiln dust production. The dump would be constructed in 50-foot lifts. The exterior face of each lift would be reclaimed as each lift is completed. The angle of repose face of each dump lift would be reduced to 2:1 and then covered with 10 inches of soil and revegetated. The next lift would be set back on a bench to produce the resultant 2.4:1 overall slope when completed (Figure 3).

c. Haul and Access roads

Haul and access roads would be reclaimed using a backhoe or bulldozer to remove downslope fill material to the cut side of the road. Where possible the cut side of the road would be pulled down to make a smooth transition with the backfilled material. A minimal road system would be left at the end of mine life to provide access to the mine property. Haul roads in limestone quarry floors would be reclaimed as part of the quarry floors. In both the sandstone and shale quarries the entire width and length of the haul roads would be left as permanent private access roads. Only roadside disturbances, including roadside ditches and cut and fill slopes would be revegetated.

d. Surface Water Management

Surface water drainage would be directed towards the mine interior in the quarries as specified in Holnam's proposed Storm Water Control Plan (Holnam, 1993b). Surface water runoff would be directed off and away from the kiln dust dumps. Post-operational water monitoring of the existing monitoring network would continue in order to verify that the mining and reclamation have produced minimal water quality impacts. This monitoring would continue until reclamation bonds are released following successful erosion control and revegetation.

e. Concurrent Reclamation

Reclamation during mine life would be concurrent in the limestone, shale and sandstone quarries and kiln dust dump locations, as has been done in the past. Since the mine opened in 1908, 253 acres have been disturbed. Twenty-one

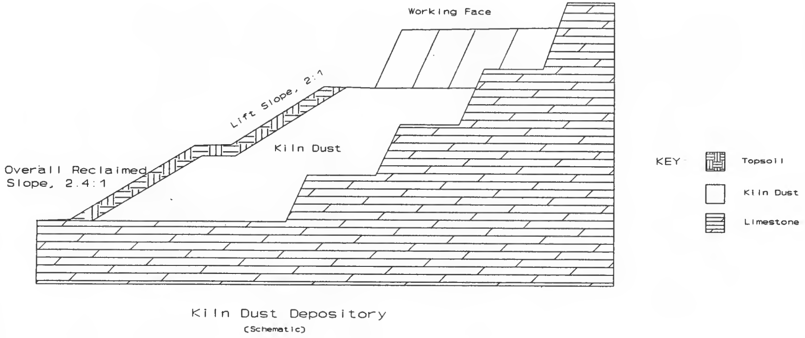


Figure 3: Cross-Section of Reclaimed Kiln Dust Dump

acres have been reclaimed to date. Grading and soil replacement would continue to occur as each quarry is mined out.

f. Solid Waste Dump

The historic solid waste landfill in the limestone quarries area was closed in 1993 according to MDHES-SHWB closure requirements (Holnam 1993a). Holnam does not propose to disturb the area for up to 30 years. The landfill would be removed before mining by applying landfill removal requirements in existence at the time of removal. After removal of the landfill and potentially contaminated soil, and then mining of the area for limestone, the old landfill location would be reclaimed as part of the limestone quarry reclamation plan.

B. Alternatives to the Proposed Plan

1. No-action Alternative

Under the no-action alternative the MDSL would deny Holnam's proposed mine operating and reclamation plan if it is shown that the proposed plans would not assure continued compliance with air and water pollution control laws. Consequently, Holnam would have to resubmit new mine operating and reclamation plans for approval, or shutdown and begin reclamation.

2. Company's Proposed Plan with Modifications

Under a modification of the company's proposed plan, the MDSL and AQB would meet with Holnam to address operational control of kiln dust from the point at which kiln dust is loaded on trucks at the mill to where it is unloaded at the kiln dust dump. The MDSL would monitor kiln dust, dust control on the dump and regulate reclamation of the kiln dust in the dump. In addition, Holnam would have to initiate the use of crushed limestone waste rock to control wind erosion on interior kiln dust dump roads until reclamation begins on that kiln dust dump lift.

The MDSL would require Holnam to incorporate recommendations from their hydrogeology consultants into their permit and provide additional water monitoring in spring(s) along Spring Creek which may drain the Madison limestone syncline. Finally, Holnam would drill an additional groundwater monitoring well below the solid waste dump site at least as deep as the elevation of the Missouri River alluvium.

Holnam would have to submit a contingency plan in case of water quality changes over time that may be attributable to effects from solid waste disposal on the mine site.

C. Alternatives Considered but Dismissed by the Agency

Currently, the EPA is reviewing the status of cement kiln dust as a hazardous substance that would be regulated under RCRA legislation. The MDSL considered the alternative of requiring Holnam to stop disposing of cement kiln dust in a non-RCRA approved facility. However, SHWB review of historic kiln dust deposits in the area concluded that cleanup under state CECRA legislation was not required. In addition, no impacts to area water quality have been documented after over 20 years of kiln dust disposal on the mine site. Therefore, the MDSL disregarded this alternative from further review as unnecessary at this time.

D. Related Actions

No major related environmental actions are under consideration in the immediate vicinity of the plant and mine sites that would contribute to impacts to air and water in the immediate area at Trident.

CHAPTER III - AFFECTED ENVIRONMENT

This chapter describes those areas and resources identified in Chapter I as being potentially affected by the proposed action. The issues of kiln dust disposal on air and water quality and the historic solid waste landfill on water quality are the only natural resource issues, identified by the MDSL, requiring further analysis.

A. Air Quality

A history of air quality cleanup at the plant site includes ongoing efforts by the mining company to reduce emissions from the plant as environmental laws were passed. Uncontrolled plant emissions prior to 1973 deposited a layer of cement kiln dust on adjacent areas downwind of the plant. This layer is up to 2-3 feet thick in places. Wind direction is generally to the northeast. Airborne dust was deposited within a two mile radius of the plant stack. These historic dust deposits are currently cemented and are obvious throughout the plant area, the adjacent townsite of Trident, and along the banks of the Missouri River.

In 1971, the plant operator at the time obtained an AQB (#282-072171) dust collection permit and constructed a collection system for the cement kiln dust. Since then, the kiln dust has been collected and deposited in mined out limestone quarries. The first kiln dust dump was used from 1973-1977 and reclaimed. Currently, kiln dust is being deposited in mined out limestone quarry 2. There is also dust collection at the crusher and transfer points. Since 1989, Holnam has instituted additional measures at the plant to limit kiln dust production. As a result, kiln dust production has decreased from over 75,000 tons per year to less than 50,000 tons per year. In addition, Holnam has plans for an additional modification to the kiln to further reduce kiln dust emissions. In 1991, the plant air quality control system was upgraded again. Currently, Holnam is in compliance with their AQB permit. Also in 1991, Holnam applied for an amendment to their existing air quality permit to modify their operations at the plant and burn waste-derived fuel instead of coal for use in the rotary kiln (Holnam, 1991). The application is on hold and is considered incomplete until rules are developed by MDHES for burning of hazardous wastes.

The area surrounding the Trident area quarries is classified as a Class II airshed, and under the Prevention of Significant Deteoriation (PSD) regulations, it is also classified as being in attainment with the national ambient air quality standards. There are no non-attainment areas within a distance of the cement plant and quarry that could be affected by blowing kiln dust.

In the past two years, the MDSL has received complaints about Holnam's operations concerning the effects of kiln dust on air quality. Some of the complaints were made because of the historic deposits of kiln dust on the surrounding area. These historic deposits resulted from the lack of air quality regulations. Some of the complaints were made because of blowing dust from the mine, mine roads, and from the existing unreclaimed kiln dust dump. Throughout the completeness process the MDSL and the AQB addressed concerns about air quality effects from blowing dust, especially kiln dust from the unreclaimed dust dump.

After reviewing the LOM amendment application and the air quality situation at the mine site, the MDSL has concluded that mining-related operational dust and blowing cement kiln dust on the dust dump can be controlled by applying BACT and can be adequately monitored through visual observation by agency personnel. BACT practices implemented by Holnam to date include a sprinkler system on the kiln dust dump and the use of dust suppressants on mine area roads. The AQB agrees that dust can be controlled with BACT (AQB 1993).

B. Water Quality

The major surface water resources in the Trident area are the Gallatin and Missouri Rivers. No surface water from the mining permit area enters the Missouri River. One small spring that flows at about 0.3 gpm is present near the shale quarry. It flows for a short distance toward the Cottonwood Gulch drainage and then infiltrates into the ground. Ephemeral drainages in the shale and sandstone quarry areas flow to the southwest and enter Spring Creek, a small stream on the Gallatin River floodplain.

An alluvial aquifer is present along the Missouri River where the Holnam plant site is located. Well logs report the alluvium to be from 19 to 35 feet thick. It is assumed that the alluvial aquifer attains a thickness greater than 35 feet in areas adjacent to the Missouri River. Bedrock present under the alluvium is limestone of the Madison Group.

Groundwater flow direction in the alluvium has been established based upon water level information gathered from monitoring wells. For most of the year, groundwater flow is to the north-northwest moving generally towards, and discharging to, the Missouri River. Because of interaction between the river and the aquifer, groundwater gradient and flow direction can vary depending on the water level in the river and on aquifer recharge rates. During the winter, the flow reverses and the Missouri River recharges the alluvial aquifer.

Because the Madison limestone bedrock is highly fractured, groundwater from the alluvial aquifer recharges the adjacent limestone bedrock. Beyond this, the flow regime in the bedrock under the alluvial aquifer is unknown.

No evidence of groundwater has been observed in exploration drill holes installed in the limestone formations in the quarry area. However, exploration holes were only drilled to depths of 100 feet or less. Groundwater may exist at greater depths. Because the limestone quarries are located in a southwest plunging synclinal structure, groundwater in the limestone quarries area may flow along this structure and discharge in springs along Spring Creek and the Gallatin River.

Water quality samples collected from the three alluvial aquifer monitoring wells and from the upgradient and downgradient surface water monitoring stations on the Missouri River have shown that the water quality in the vicinity is good. Low levels of arsenic have been found in all wells and in both river samples, however, arsenic is a prevalent naturally occurring substance in the waters of the upper Missouri River basin. The highest arsenic level measured was 0.032 mg/L which is below the Maximum Contaminant Level (MCL) for arsenic in drinking water of 0.05 mg/L.

C. Socioeconomics

Cement plant continued operations are dependent on natural resource supplies from local quarries. Cement manufacturing has provided a stable source of jobs for the Gallatin County economy since the early 1900's. Holnam currently is one of the major employers in the local economy employing about 90 people. Holnam pays over $12 million in benefits, wages, state and local taxes and the purchase of goods and services (Holnam 1993a). Gallatin County is one of the fastest growing counties in Montana. No changes in the mining or milling rate are proposed as part of the LOM expansion plan. Holnam currently employs 11 for their mining operations.

D. Other Resources

Impacts to other resources were not at issue. Therefore, these resources are not addressed in detail. Threatened and endangered species are addressed in Chapter I. No wetlands occur within the proposed expansion area and cultural resource studies have documented a lack of important cultural sites.

CHAPTER IV - ENVIRONMENTAL CONSEQUENCES AND CUMULATIVE EFFECTS

This chapter describes the potential effects of the alternatives described in Chapter 2, the impacts on the resources described in Chapter 3, and forms the analytical basis for the comparison of alternatives in Chapter 5. The scope of this analysis is limited to issues related to the proposed action that may involve significant impacts. Socioeconomic issues related to selection of the no-action alternative was also identified as an important issue. As identified in Chapter 1, the kiln dust and solid waste dumps could have potential impacts on air and water quality. Interestingly, no important direct effects of mining were identified in scoping. The indirect effects of solid waste disposal on the mine site were the only important natural resource issues identified.

Long-term planning by Holnam at their Trident plant and quarry locations has resulted in a proposal to continue the present operation which would result in disturbing a total of 587 acres as part of a "Life-of-Mine"(LOM) expansion. No other land use changes and related environmental disturbances that would affect the air and water quality in the immediate area have been proposed. Therefore, no cumulative effects are discussed in this EIS.

A. Company's Proposed Plan

1. Air Quality

a. Recent Kiln Dust Air Quality Problems at Holnam

The MDSL has reviewed the problems with kiln dust and air quality at other cement plants in the US (MDSL 1992a). Various studies have documented that kiln dust can irritate the eyes of exposed workers or others who come in contact with the dust if they do not take precautions to cover their eyes. The Mine Safety and Health Administration (MSHA) and Occupational Safety and Health Administration (OSHA) regulations protect exposed workers. Kiln dust control at the plant is regulated through Holnam's air quality permit. Holnam deposits the kiln dust removed from the plant in mined out limestone quarries. Thus, kiln dust becomes a part of the quarry operating and reclamation plan regulated by MMRA.

The public is concerned because kiln dust from the existing mine area has been observed blowing off the mine site on windy days, especially during summer thunderstorm activity. An indication of the level of nuisance and hazard created by blowing kiln dust would be the build up of recent dust deposits downwind of the kiln dust dump and off the permit boundary. When cement kiln dust settles and is rained on it becomes immobilized in "cemented" deposits. Thus, it does not become airborne again. Inspections by the MDSL in 1992 and 1993 evaluated the surrounding area and could not find evidence of any new deposition of kiln dust (MDSL 1992b, 1993).

Holnam has committed to and implemented increased dust control measures to minimize problems with operational dust control at both the plant and mine site. Holnam has hired a full-time person to manage dust control on the plant and mine site and has treated the mine roads with a dust suppressant. In addition, a sprinkler system is used to wet the kiln dust dump on windy days to prevent blowing dust. As a result of these measures, kiln dust control improved in 1993.

In spite of dust control measures implemented in 1993 by Holnam, problems with blowing kiln dust at the dump site still occur occasionally when trucks are unloaded, especially on windy days. In addition, dust can become a problem on windy days when surface exposed kiln dust dries out between sprinkling periods. Finally, dust is a problem on the kiln dust dump interior roads as trucks break up the kiln dust crust causing the fine particles to become erosive again.

Other factors limit dust problems in the area. First, Holnam has reduced kiln dust production by 50 percent since 1989 by modifications to the plant operation. Second, Holnam plans additional modifications to the plant which will further limit future kiln dust production. Finally, Holnam has proposed reclaiming the kiln dust dump in lifts, which will limit the exposed kiln dust that can blow away at any one time.

The nearest residences are in the town of Trident ¼ mile west of the mine site. The only other people exposed to occasional blowing kiln dust are drivers using the cutoff road from Trident to the Clarkston-Logan county road through the mine area and fisherman/hunters/recreationists using the Missouri River corridor west of Trident. Concentrations of dust outside the permit area are less than levels that would affect human health and thus below levels which are required to be controlled under the Air Quality Act. Therefore, kiln dust off the permit area is only a nuisance factor primarily because it is visible. Secondarily, it may cause temporary eye irritation to travelers using the shortcut road from Trident to Logan.

Air quality problems can be further minimized with BACT at the current mining and cement manufacturing rate (AQB 1993). The proper application of BACT by Holnam should reduce air quality problems to acceptable levels.

2. Water Quality

a. Historic Solid Waste Disposal Facility on the Mine Permit Area

An historic landfill within the limestone mine permit area has been used by the mining company and by local residents of Trident for years. Based on data analysis to date, concentrations of all water quality parameters have been found to be below the applicable standards.

Continued monitoring of water quality as part of mine and mill operations may not detect problems from the historic landfill site. If water monitoring as part of the mine operating permit program indicates any potential water quality problem from the landfill site, the MDSL would coordinate with the SHWB to resolve the problem. Potential mitigations could include additional monitoring, testing and removal of the landfill. The MDSL would coordinate with the SHWB about the removal of the solid waste landfill during the 5-year plan period when Holnam proposes to disturb the area, which may be 30 years from now.

Holnam has not proposed a contingency plan in case of water quality changes over time as a result of solid waste disposal on the mine site.

b. Kiln Dust Water Quality Concerns

Kiln dust from cement quarries has produced problems with water quality at several sites in the US (MDSL 1992b). Potential water quality problems from cement kiln dust include heavy metal contamination and increases in the pH and temperature of water above water quality standards. Water quality pH sampling at several cement plants have shown pH values as high as 11-13 where a shallow groundwater table was present. At Holnam, surface water resources are limited and groundwater is over 10' deep in the plant area and over 100' deep in the mine areas. Therefore, the potential for contamination of waters is limited.

Cement kiln dust can contain high concentrations of alkaline material (sodium and potassium) as well as calcium oxide (lime). Aluminum, silicon, iron oxide, magnesium oxide, and sulfates may also be present. Trace concentrations of chromium, lead, zinc, cadmium, molybdenum and other metals can be found. Kiln dust is highly caustic and pH's as high as 13 have been reported in water. Kiln dust produces calcium hydroxides in water. Water quality violations have been noted at other cement plants for pH, sulfates, sodium, potassium, silicon, chloride, total organic carbon, arsenic, chromium, lead, zinc, and some inorganic constituents. The EPA is currently evaluating the potential toxicity of cement kiln dust (EPA 1993).

Cement kiln dust at Holnam has been sampled and has many of the same properties as cement kiln dust from other cement plants. The MDHES-SHWB sampled kiln dust at Holnam in 1993. Since soil cleanup levels are determined by a site-specific health and ecological risk assessments, Montana does not have any regulatory standards for total metals in soils that can be used for comparison. However, levels are commonly compared to background levels for western soils to determine where a problem may exist (SHWB 1993).

A comparison of total levels for metals analyzed are similar to background levels for western soils in arsenic, chromium, copper and iron. Total levels for lead in Holnam kiln dust exceeded background literature values but were well below levels for any site specific cleanup standard for lead determined in Montana. In addition, lead levels are below the Washington state cleanup level for residential soils (SHWB 1993).

The total cadmium level in kiln dust exceeded background literature values but was below the cleanup level for cadmium in Washington soils.

The total zinc level in kiln dust was above the background literature value. The MDHES-SHWB concluded that this does not present a health hazard but that it is unknown whether this presents an environmental hazard. The MDSL reviewed groundwater quality and determined that primary drinking water standards for metals including zinc are not exceeded at the site.

The pH of kiln dust was 12, indicating a potential for water quality problems similar to those observed at other cement plants in the US. The MDSL reviewed the baseline water quality data at the site and found that water at the plant site has not exceeded the pH limit of 9.

Kiln dust has been produced at the site from 1910 to the present and current water quality monitoring has not indicated a problem from heavy metals or pH. Holnam has committed to surface and groundwater monitoring to detect any surface and groundwater impacts. Monitoring has been increased downgradient of the kiln dust dumps to improve monitoring of potential water quality impacts in the future. Monitoring sites were selected based on review of groundwater flow studies done in the area. The chance of water quality impacts from current kiln dust deposition practices at Holnam are minimal.

Holnam has not proposed a contingency plan in case of water quality changes over time from kiln dust deposition on the mine site.

3. Socioeconomics

No additional growth-inducing or growth-inhibiting effects on the local economy would result from the company's proposed plan. Approval of the mine expansion would ensure an important source of jobs for Gallatin County. Holnam would continue to patronize local vendors for mine related support services, and mine personnel would continue to contribute much needed capital into the economy by their acquisition of goods and services.

Holnam would continue to supply quality cement made from Montana resources for Montana and the northwestern US. Mine expansion would allow Holnam to pursue long-term contracts knowing they would have the mine resources to make the cement.

B. No-Action Alternative

1. Air Quality

a. Recent Kiln Dust Air Quality Problems at Holnam

Under the existing operation and reclamation plan, dust levels would not be minimized and would continue to be a nuisance to local residents, mine workers, recreationists and drivers through the mine area.

2. Water Quality

a. Historic Solid Waste Disposal Facility at Holnam

The selection of the no-action alternative would leave the solid waste disposal facility as is. Holnam closed the facility according the MDHES-SHWB standards in 1993. Holnam has drilled monitoring wells to identify potential impacts to water quality impacts from the waste dump over time. No water was found in two holes up to 100 feet deep. No additional monitoring would occur.

b. Kiln Dust Water Quality Concerns

The no-action alternative would limit kiln dust deposition in the area to current levels. No impacts from kiln dust deposition to date have been documented on area water quality.

3. Socioeconomics

Public concerns about Holnam's operations have resulted from the use of the site for non-mining solid waste disposal, and not from mining wastes as is common on other mining sites in Montana. Historically, kiln dust from the cement plant has been a concern. A solid waste landfill on the mine site contains hazardous wastes. Recently, Holnam has indicated a desire to use certain classes of waste products as a fuel source for its cement kilns.

Mining has provided the resource base for the cement plant while directly providing only 11 jobs. Mining at existing rates is proposed, therefore, no growth-inducing or growth-inhibiting effects should occur. However, if air and water quality impacts from solid waste disposal on site result in the selection of the no-action alternative, one of the potential results could be mine closure. This would force cement plant closure and the loss of 90 jobs in Gallatin County.

C. Company's Proposed Plan with Modifications

1. Air Quality

a. Recent Kiln Dust Air Quality Problems at Holnam

Holnam does have available crushed limestone waste rock that is high in magnesium. This crushed rock could be used to cover interior road surfaces in the kiln dust dump to prevent reactivation of crusted kiln dust by haul trucks. Under this alternative, once a portion of the current kiln dust lift is leveled and bladed to grade, Holnam would deposit a thin lift of crushed limestone waste rock to stabilize the interior road surfaces in the kiln dust dump area. This combined with sprinkling areas which are not covered with rock would serve to meet BACT objectives and minimize the potential for blowing dust to acceptable levels.

2. Water Quality

a. Historic Solid Waste Disposal Facility on the Mine Permit Area

Exploration drilling and groundwater monitor well development have not encountered water in the limestone quarries. Data indicates water could be up to 1000 feet deep at the base of the Madison limestone syncline in the area. Limited data indicates that groundwater under the limestone quarries may flow to the southwest and discharge in spring(s) along Spring Creek in the Gallatin River drainage. Sampling this spring(s) as a part of Holnam's monitoring program would be required under this alternative.

Sampling of this spring(s) along Spring Creek according to the proposed water monitoring schedule would identify current water quality levels and document any potential changes over the life of the mine. This would supply additional documentation of minimal water quality changes in an area that may be impacted by mining activities and the solid waste landfill.

Holnam has only drilled two wells in the area potentially influenced by the solid waste landfill. Under this alternative, to ensure that the solid waste dump has not impacted the groundwater downgradient of the landfill and to further define the bedrock groundwater regime, Holnam would be required to drill one monitoring well at least to the elevation of the Missouri River (4000 feet). This elevation equates to approximately 300 feet below the solid waste dump. This would document conclusively the lack of a general water table at that elevation below the limestone quarries. If water is encountered, this well would also serve as a monitoring well upgradient of the current limestone mining activity. Holnam would be required to submit a contingency plan for remediating water quality problems from the landfill in case water monitoring over time shows an impact.

b. Kiln Dust Water Quality Concerns

No modifications to Holnam's water quality monitoring of the kiln dust dump are proposed. However, Holnam would have to submit a contingency plan in case of water quality changes over time from the kiln dust dumps on site. In addition, if kiln dust becomes a hazardous waste under RCRA, Holnam would have to submit a revised operating and reclamation plan to meet appropriate statute requirements.

3. Socioeconomics

No additional growth-inducing or growth-inhibiting effects would result from selection of the company's proposed plan with modifications.

D. Resource Commitments

1. Company's Proposed Plan

Currently, over 25 acres have been disturbed by mining in the area. Land use would change from grazing and wildlife habitat to mining for the proposed disturbances of 587 acres. No important effects have been identified on other resources. No wetlands, threatened and endangered plant or animal species would be affected. Noxious weeds would be controlled.

The removal of the limestone, sandstone and shale resource would represent an irretrievable and irreversible commitment of resources. However, these geologic resources are common in the area and represent a small fraction of one percent of the total resource. This is an unavoidable long-term impact from mining.

Reclamation would restore the premining land use function and productivity to the landscape. All areas except minimal road systems and rock highwalls would be soiled and revegetated. Diversity of plant species would be reduced. The loss of productivity and wildlife habitat for the mine life would be a short-term direct impact of mining.

Even though reclamation is required, the mining areas would not be restored to premine land configurations and the mines would appear as man-made features on the landscape. This is a very long-term direct impact of mining.

Approval of the proposed company plan would not produce any direct growth-inducing effects on the local economy, as Holnam has not proposed any modifications to mining or milling rates.

2. No-action alternative

Cement manufacturing has been ongoing on the site for over 80 years. This manufacturing process and mining has provided a steady source of jobs and revenue for the Gallatin County area. The potential exists based on the resources in the area for mining and manufacturing to continue for at least another 60 years. The selection of the no-action alternative would require Holnam to:

- prepare another application with an alternative operation and reclamation plan that would not impact air and water resources, or

- shut down the mine and begin reclamation as specified in the existing reclamation plan.

Shutting down the mine would result in the loss of only 11 mining jobs. However, the resultant effects of mine closure on cement plant closure would produce a significant impact to the local Gallatin County economy. This would have a potentially significant growth-inhibiting effect on the Logan-Three Forks portion of Gallatin County.

Impacts to natural resources would remain at existing levels and would be reduced as reclamation would commence on the property.

3. Company's Proposed Plan with Modifications

The effects on resources under this alternative would be the same as for the company's proposed plan.

E. Cumulative Effects

The MDSL has not identified any related land use changes in the area that would potentially increase the effects on air and water quality. Therefore, cumulative impacts associated with Holnam's continued mining at the site are not any greater than those under the company's proposed plan or the company's proposed plan with modifications. The selection of the no-action alternative, could force mine closure. This would begin to reduce any air and water quality impacts as the mine is reclaimed. However, this in turn could result in cement plant closure which would have potentially significant effects on the local economy in Gallatin County.

F. Additional Modifications Considered but Dismissed

1. Use of Soil to Cover Kiln Dust Immediately.

The public has suggested covering the kiln dust with soil immediately after dumping each load in the dust dump. The MDSL has considered this modification and decided that the immediate use of soil would be an inappropriate use of soil resources until a portion of the dump is ready to reclaim permanently. The loess soil in the area is fine textured and erosive, as well as being susceptible to becoming muddy when wetted by sprinkling.

CHAPTER V - COMPARISON OF ALTERNATIVES AND CONCLUSIONS

This chapter summarizes the effects of each alternative for comparative purposes and identifies the agency's preferred alternative.

A. Company's Proposed Plan

Approval of the LOM plan as proposed would result in the continued steady expansion of mining related disturbances and kiln dust deposition in the mined out limestone quarries. Some blowing dust would continue to be generated at the kiln dust deposition site from unloading of trucks and reactivation of dust on windy days between sprinkling activities and from use of kiln dust dump roads. This dust would continue to be a nuisance. The adequacy of dust control would be evaluated through visible observation of the operation by agency personnel on an on-going basis.

Approval of the company's proposed plan would not affect the solid waste landfill on the site for up to 30 years. Potential water quality impacts from the historic solid waste landfill on the site could be influencing water in the limestone bedrock at depth and/or at the headwaters of Spring Creek in the Gallatin River drainage. The potential is limited because of the dryness of the site. In summary, the impacts of continued mining on air and water quality would be minimal to non-existent. However, mining activities would continue for at least 60 years.

B. No-action Alternative

Selection of the no-action alternative would limit the existing operation to its present level of permitted disturbance. The mining company could propose another mine and reclamation plan that further limits impacts to air and water quality or it would be forced to begin reclamation within the timeframes specified in MMRA. If the mine was closed, cement plant closure would follow, which could have important affects on the local Gallatin County economomy.

C. Company's Proposed Plan with Modifications

The company's proposed plan with modifications, which is the agency's preferred alternative, would stipulate additional measures identified below to limit kiln dust wind erosion on the kiln dust dump roads and to monitor potential water quality impacts from the historic landfill and mining activities on groundwater and surface water resources. Because of the length of the proposed mine life, these additional measures further limit air quality impacts and increase knowledge about groundwater resources in the area. These additional measures are:

1) Holnam must present a plan for limiting the exposed surface of an active kiln dust dump lift that would be susceptible to wind erosion by applying limestone waste rock. The plan must be submitted for agency review and approval within 60 days of the LOM amendment approval.

2) Holnam must propose a location(s) and plan to monitor spring(s) along Spring Creek in the Gallatin River drainage. The location(s) and monitoring schedule must be submitted for agency approval before the next regular water sampling event as proposed in the operating permit LOM amendment.

3) Holnam must propose a location and plan for drilling a potential water monitoring well below the solid waste landfill on the limestone quarry permit area. The well must be drilled to the elevation of the Missouri River. If water is encountered, the well must become a regular water monitoring location throughout operations.

4) Finally, the agency would stipulate that Holnam must submit a contingency plan for kiln dust dumps and for the solid waste landfill in case water monitoring indicates a deterioration of water quality during mine life. The plan must identify trigger levels in water quality monitoring that would initiate changes in kiln dust disposal practices or in initiating removal of the solid waste landfill.

   The plan for the cement kiln dust must meet EPA requirements for "tailored contaminant release controls" as discussed in the EPA's report to congress on cement kiln dust (EPA 1993). Some of the controls listed by EPA include: run-on and run-off diversion design changes, additional water monitoring requirements, additional reclamation capping requirements, etc. If cement kiln dust becomes a waste product to be controlled by RCRA or if Holnam receives a permit to burn hazardous waste fuel, then Holnam must submit a revised operations and reclamation plan to the MDSL for kiln dust handling and disposal that meets the requirements of appropriate statutes.

D. Conclusions

The environmental effects of mining and related activities on the resources in and around Holnam's mine and facilities have never been analyzed in an environmental review because the original permit predated current MEPA procedures. The LOM expansion (the company's proposed plan), a modified LOM expansion with additional air quality controls and water monitoring, and a no-action alternative have been evaluated. In this review, the MDSL has concluded that the effects of mining would have no significant effects on the quality of the human environment. However, this review of the proposed expansion of Holnam's mining operations has identified two areas of potential secondary impact: effects of cement kiln dust on air and water quality, and effects of the historic landfill on water quality. This environmental impact review has determined that there would be potential impacts associated with the mine expansion on these resources. In addition, the MDSL has concluded that the selection of a no-action alternative could result in the closure of the mine and cement plant which could cause secondary socioeconomic impacts to the local Gallatin County economy.

Therefore, the MDSL's preferred alternative is the proposed plan with modifications as summarized under section C above.

CHAPTER VI - CONSULTATION AND COORDINATION

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The following is a list of other agencies, groups, or individuals who were contacted or contributed information to the EIS:

- Montana Department of Fish, Wildlife and Parks
- State Historic Preservation Office
- Montana Department of Health and Environmental Sciences
    - Air Quality Bureau
    - Water Quality Bureau
    - Solid and Hazardous Waste Bureau

Superfund Section
Underground Storage Tank Section
Waste Management Section

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GLOSSARY

ambient	present air quality levels used to document changes over time
AQB	Air Quality Bureau, Department of Health and Environmental Sciences
ARM	Administrative Rules of Montana
BACT	Best Available Control Technology
CECRA	Comprehensive Environmental Cleanup and Responsibility Act
cemented kiln dust	old kiln dust deposits that have been exposed to rain and allowed to dry, forming a crust.
CFR	Code of Federal Regulations
grandfathered	mining and milling facilities that were in operation before the passage of reclamation laws and are therefore exempt from regulation
EA	Environmental Assessment - an environmental documentation of a proposed action and its effects on the environment
EIS	Environmental Impact Statement - a comprehensive environmental document delineating a proposed action's effects on natural and human environment. An EIS gives an in-depth look at specific issues and cumulative effects in an area. Required by the federal National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA)
EO	Executive Order
EPA	Environmental Protection Agency
HRB	Hard Rock Bureau of the Department of State Lands
hydrogeology/ hydrogeological	The study of water storage and movement in rock formations
loess	Glacial wind blown soil deposits

LOM	Life-of-Mine Expansion Application
LPP	Leak Prevention Program
LUST	Leaking Underground Storage Tanks
MCA	Montana Codes Annotated
MDHES	Montana Department of Health and Environmental Sciences
MDSL	Montana Department of State Lands
MMRA	Montana Metal Mine Reclamation Act
MPDES	Montana Pollution Discharge Elimination System
MSHA	Mine Safety and Health Administration
NPL	National Priority List
OSHA	Occupational Safety and Health Administration
pH	Measure of the acidity or alkalinity of water; 7 is neutral, low numbers are acidic; high numbers are basic
PL	Public Law
PLP	Potentially Responsible Persons
PSD	Prevention of Significant Deteoriation
PTRCB	Petroleum Tank Release Compensation Board
SHPO	State Historic Preservation Office
SHWB	Solid and Hazardous Waste Bureau, Montana Department of Health and Environmental Sciences
SWP3	Stormwater Pollution Prevention Plan
syncline/synclinal	Rock formations that have been folded into a U-shape
UST	Underground Storage Tank Section, Montana Department of Health and Environmental Sciences

WMS	Waste Management Section, Montana Department of Health and Environmental Sciences
WQB	Water Quality Bureau, Department of Health and Environmental Sciences

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